Minimum Size Discussions

November 2008

Division of Aquatic Resources
Department of Land and Natural Resources
State of Hawai'i

"Fish for the Future"

Presentation Outline

- Who Are We?
- Why Are We Here?
- What Are Minimum Sizes?
- Which Species Considering?
- Why These Species?
- What's Next?

Presentation Outline

- **Who Are We?**
- Why Are We Here?
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- Why These Species?
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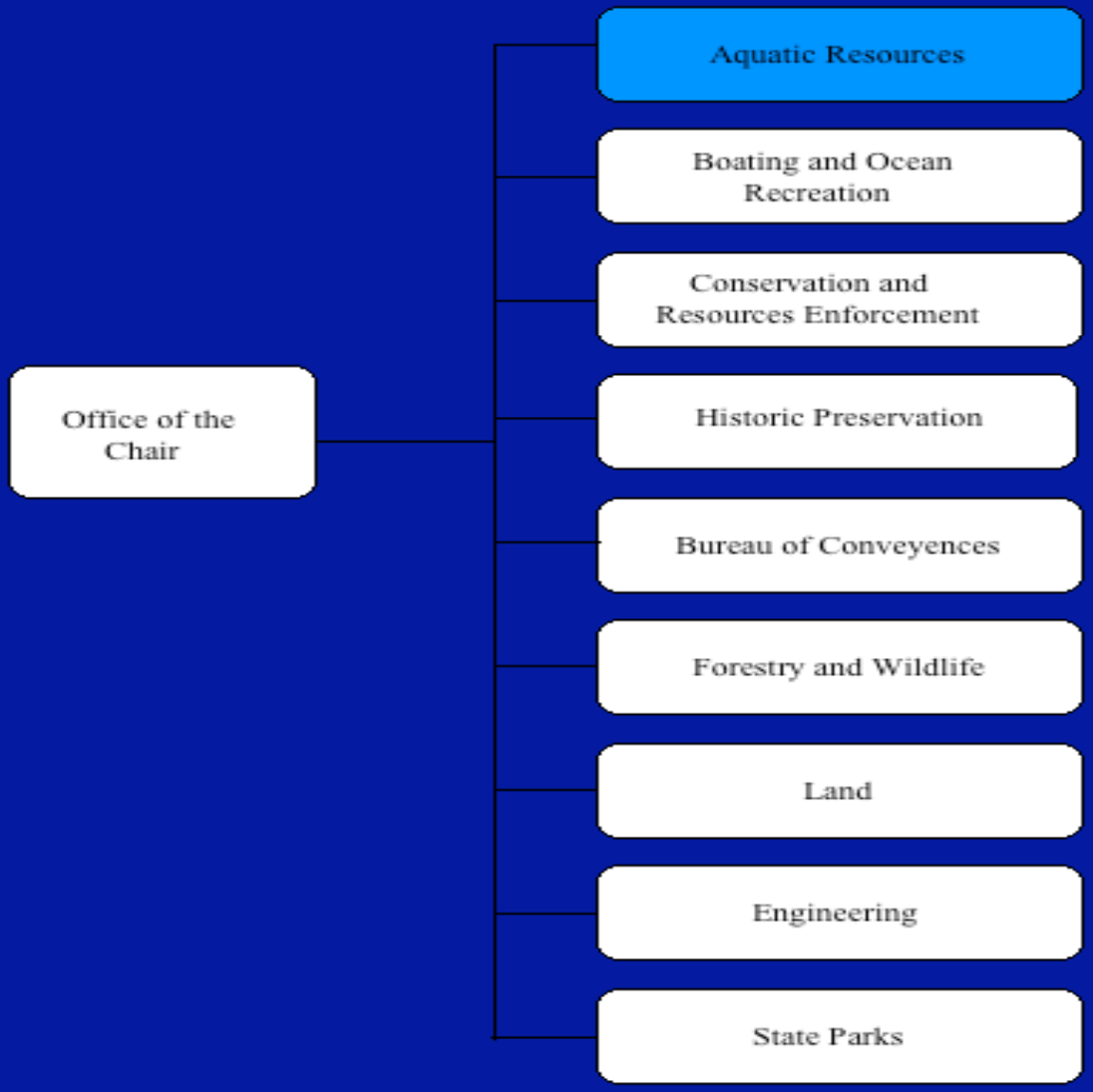
We Are DLNR

- Department of Land and Natural Resources (DLNR).
- DLNR is responsible for the management of the State's natural and cultural resources.
- This includes the forests, land, ocean, streams, and all the critters that live on the land and in the sea.

Why Manage Resources?

- To conserve Hawaii's natural and cultural resources for now and the future.
- To ensure that what we enjoy today will still be here for those who come after us.
- To perpetuate our island lifestyle and values.

Department of Land & Natural Resources Organizational Structure



Divisions

Division of Aquatic Resources

- Responsible for managing the State's aquatic resources. These resources include all the living plants and animals that inhabit the marine and freshwater environments.

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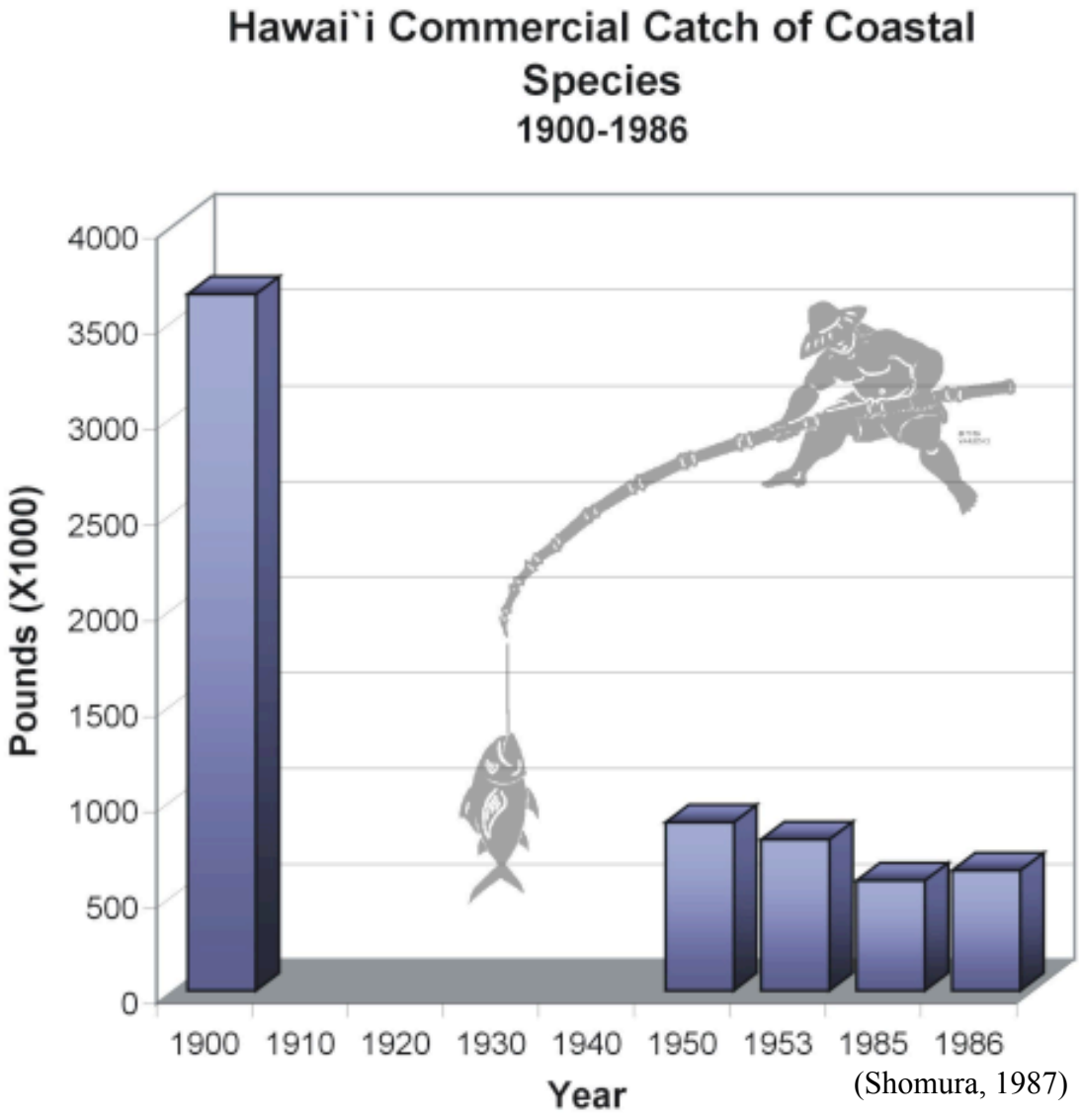
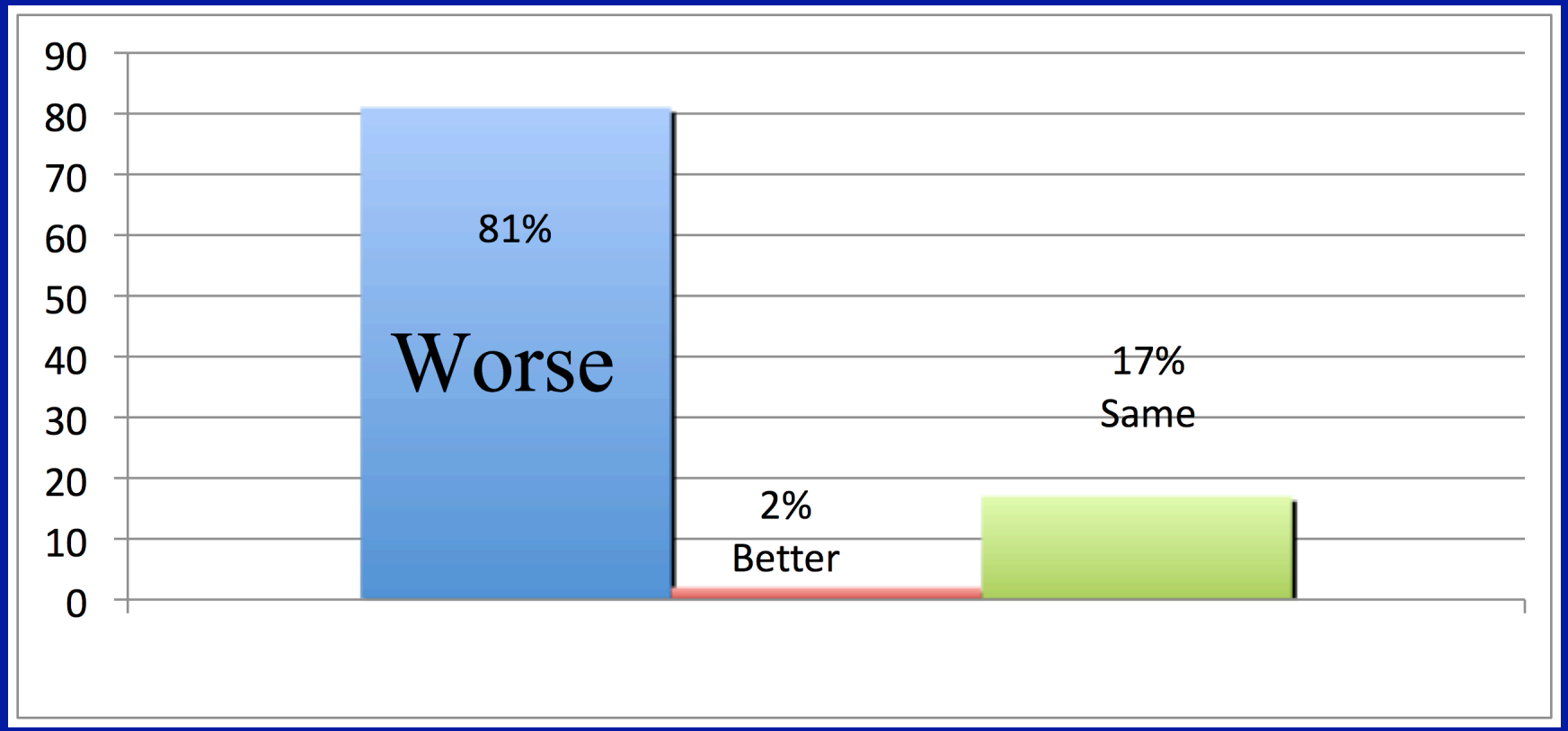
Declining Commercial Landings!



(Shomura, 1987)

Some Evidence Comes from Underwater Visual Census Data "Fish Counts"

Has Fishing Gotten Worse, Better, or Stayed the Same?



Source: 2002 DAR Survey

Declining Resources Have Many Causes!

There is Plenty of Blame to Go Around!

Meeting Purpose

- To share information to make better decisions
- To discuss the use of minimum sizes to manage marine resources
- To gather your comments and ideas
- To use these comments to evaluate current regulations

Definitions

- Minimum size = means the smallest size below which some regulation is triggered
- Maximum size = means the largest size above which some regulation is triggered
- L_{min} = means the minimum length at which a species is first sexually mature
- L_{50} = means the length at which 50% of animals sampled from a species are sexually mature

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What Are Minimum Sizes?

- Intended to increase size (age) at first capture to allow animals to reproduce at least once
- Increase yield per animal since larger animals produce more useable meat than smaller animals
- Indirectly encourages net fishers to use larger meshes to avoid capturing smaller fish

Minimum Size Ranges

- Ranges are used when multiple species are included in one group
  - 3 species in one group with each species having a different minimum size
- Ranges are used when the males and females of the same species mature at different sizes
  - Males usually mature at a smaller size than females
- Ranges are used when different percentages of the fish of the same species mature
  - 10% are mature by 10” and 50% are mature by 11”

When Do Minimum Sizes Work Best?

- When a species is suspected of not having enough spawning adults
- When an undersized animal can be returned unharmed if taken
- When the taking of an undersized animal can be avoided
- When it is combined with other fishing regulations, such as minimum mesh size

Commercial vs Non-Commercial

- Commercial minimum size limits may be set at L_{50} or higher to ensure fish spawned prior to capture
- Non-commercial minimum size limits may be set at L_{min} or lower to make more fish available to this fishing sector
- One size for both would be equal but may be detrimental to one or both groups

One Size Fits All

- Need to raise min size for non-com fishers so the com fishers don't take too small fish
- Need to lower min size for com fishers so non-com fishers can take some fish
- If a fish has a min size range of 10-12", might make it 11" to fit both user groups but non-com fisher might catch more if the size were 10"

Custom Built

- A larger min size for commercial fishers might make more sense because they take so much that a more conservative min size is better
- A smaller min size for non-commercial fishers might make more sense since they only take a few and there's less need to be as strict
- For example, a commercial min size of 16" and a non-commercial size of 10"

Min Size Management Goals

- Limit take of immature fish
- Allows fish to spawn at least once before capture to enhance reproductive output
- Maximize utility of each animal taken
- Improve stakeholder involvement in fisheries management

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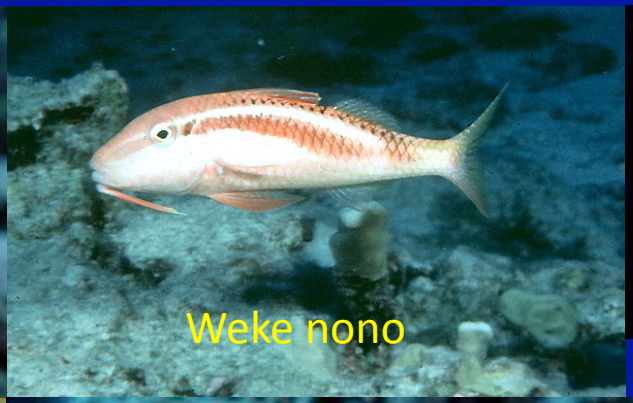


Photos: J Randall

Goatfish

Parrotfishes

Photos: J Randall

Sleeping Uhus

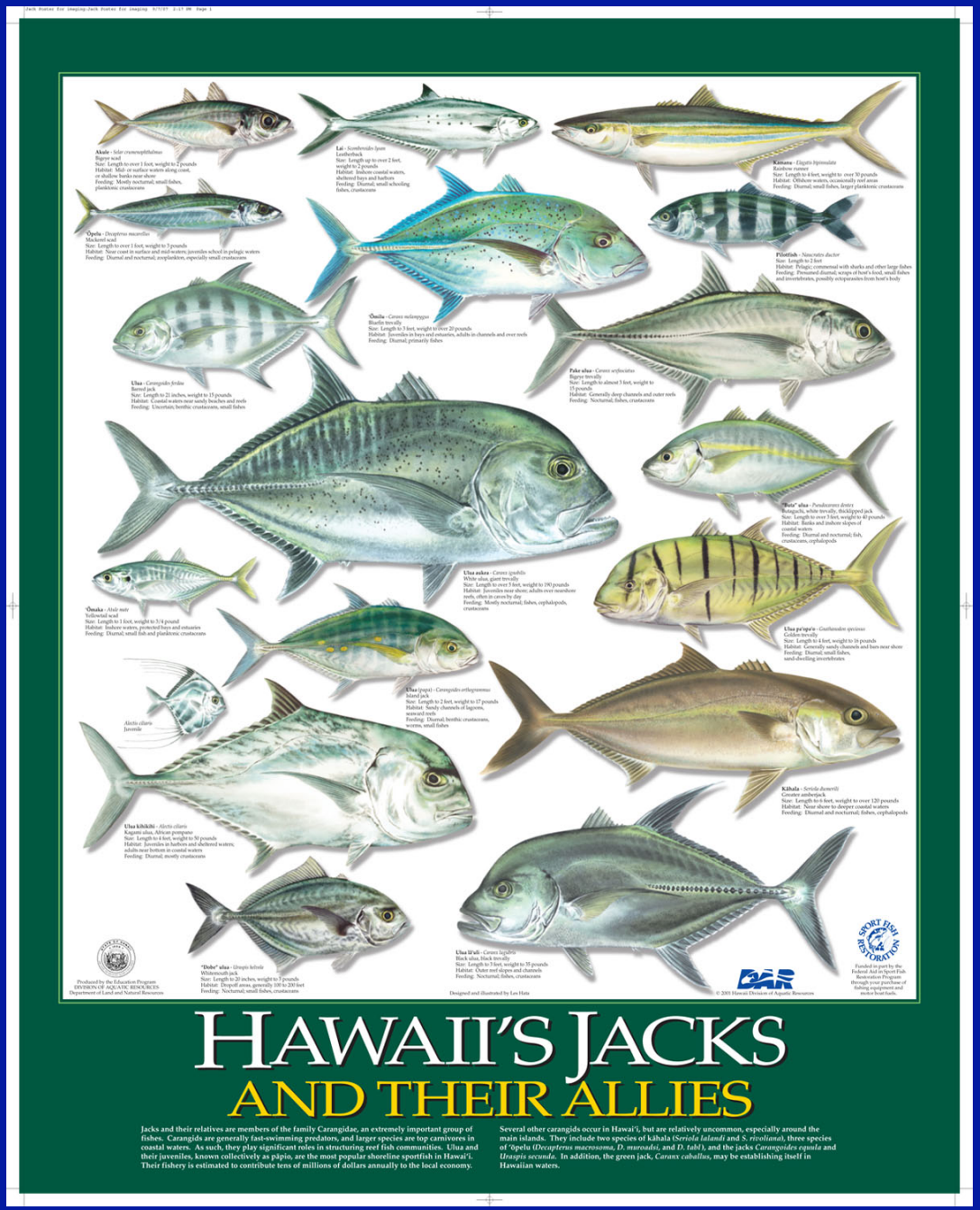
Stareye
(*Calotomus carolinus*)

Yellowbar
(*Calotomus zonarchus*)

Parrotfish Jaws

Teeth separate

Dental plates



Jacks

Includes akule, opelu, Rainbow runner, and uluas

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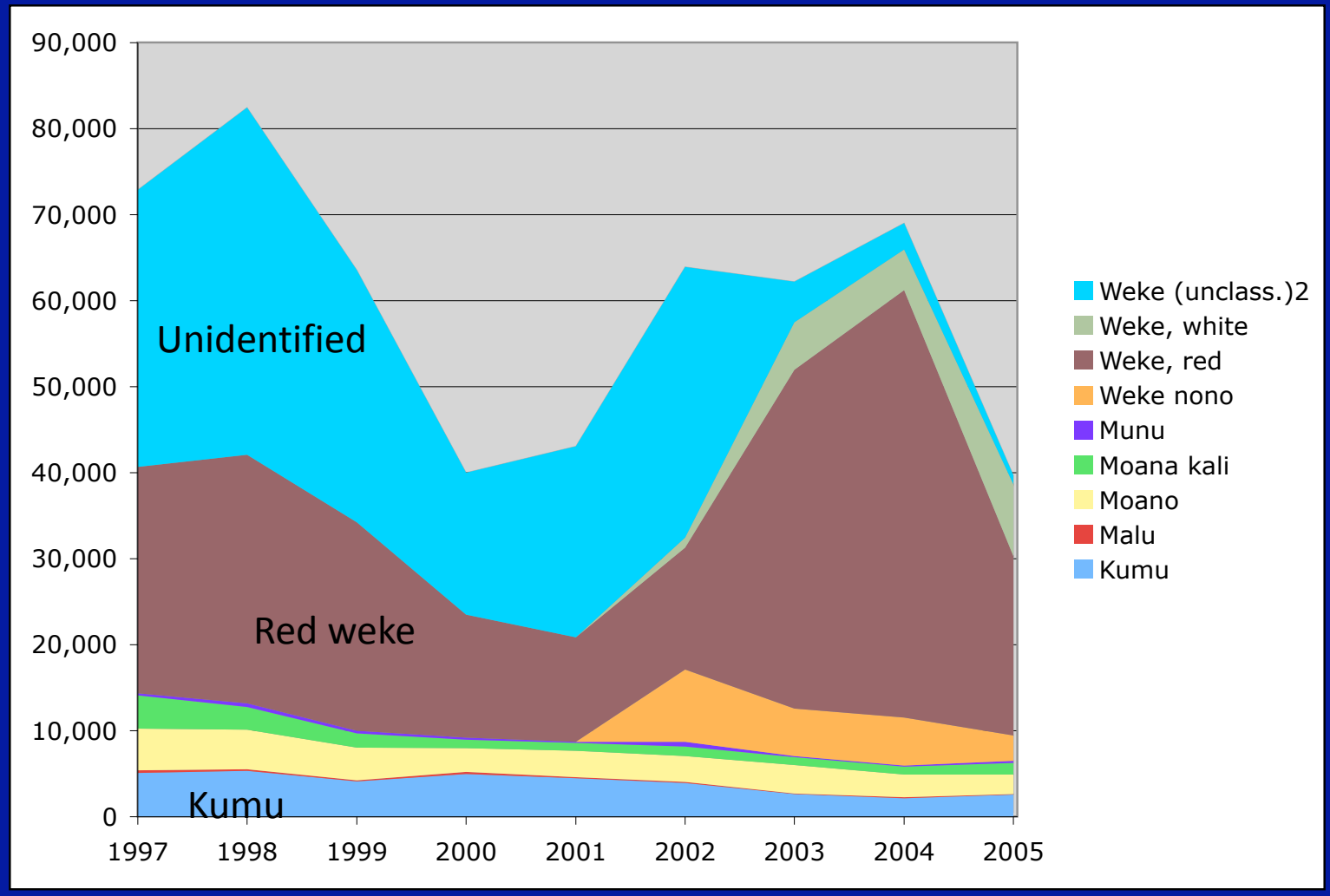
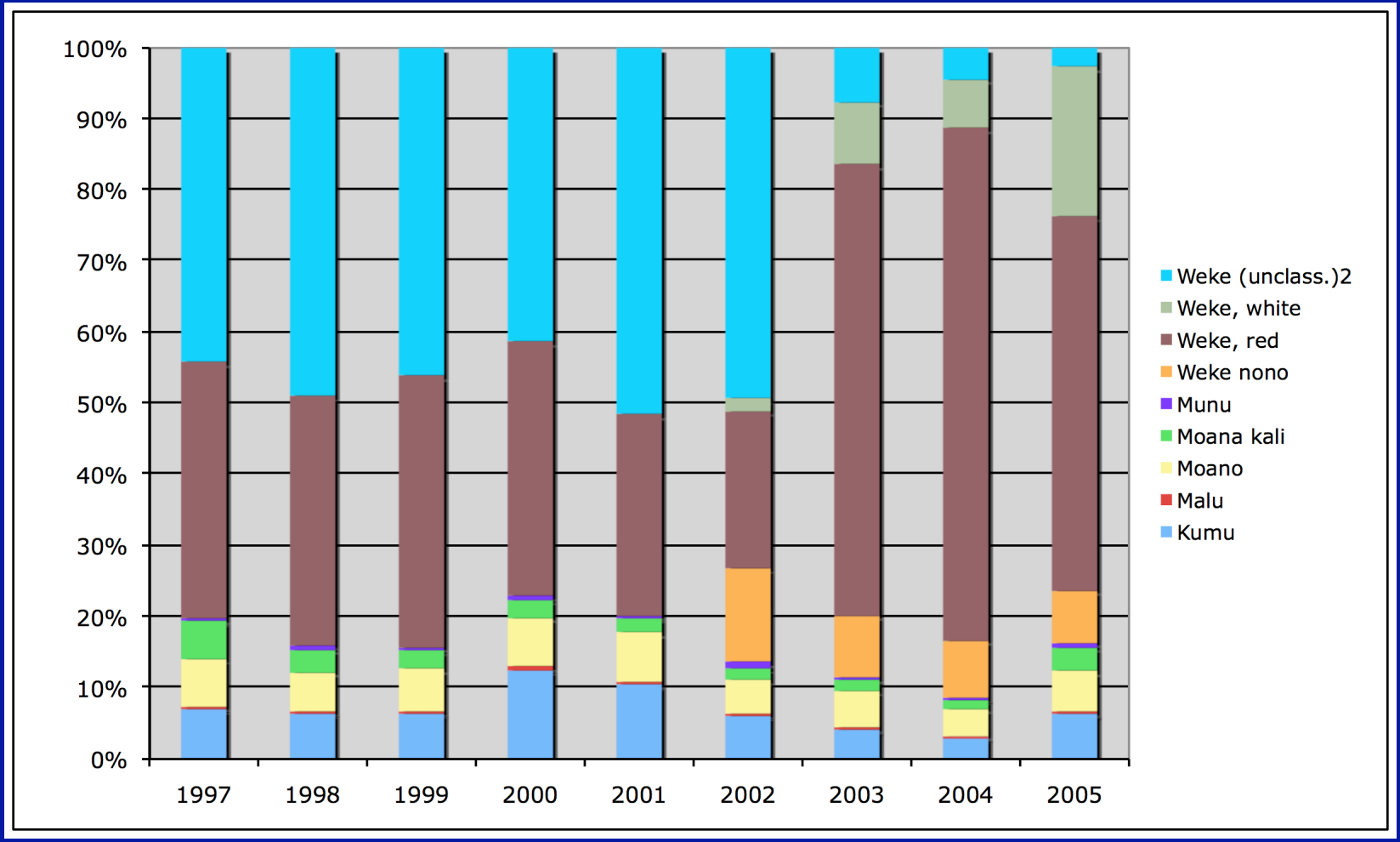
Why Regulate the Goatfish?

- Commercial landings indicate declining catch rates (pounds/trip) for some species
- Some species are in high demand
- Fisher opinion surveys indicate goatfish are high on list of species needing regulation

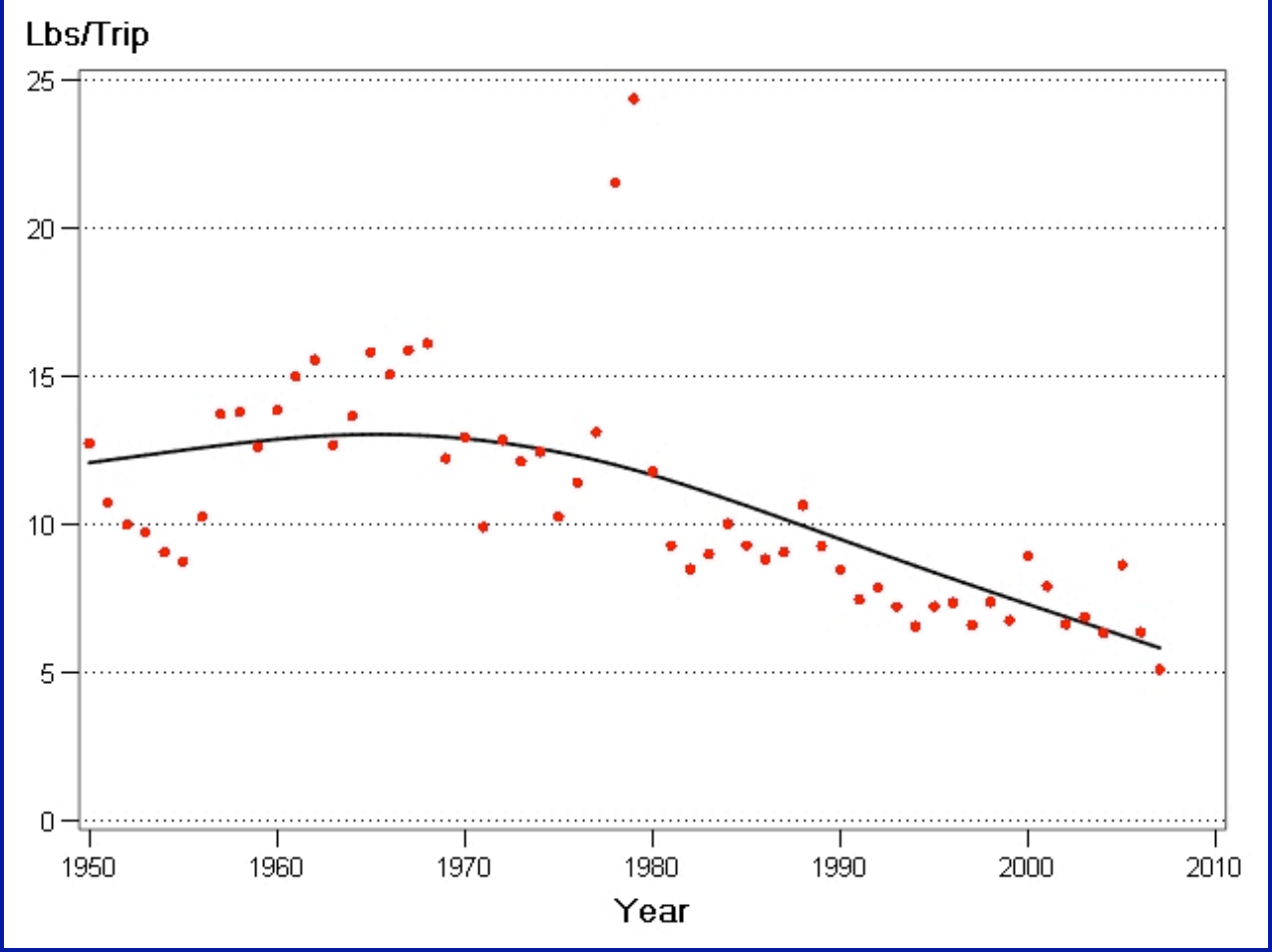
Goatfish Total Annual Commercial Landings Caught



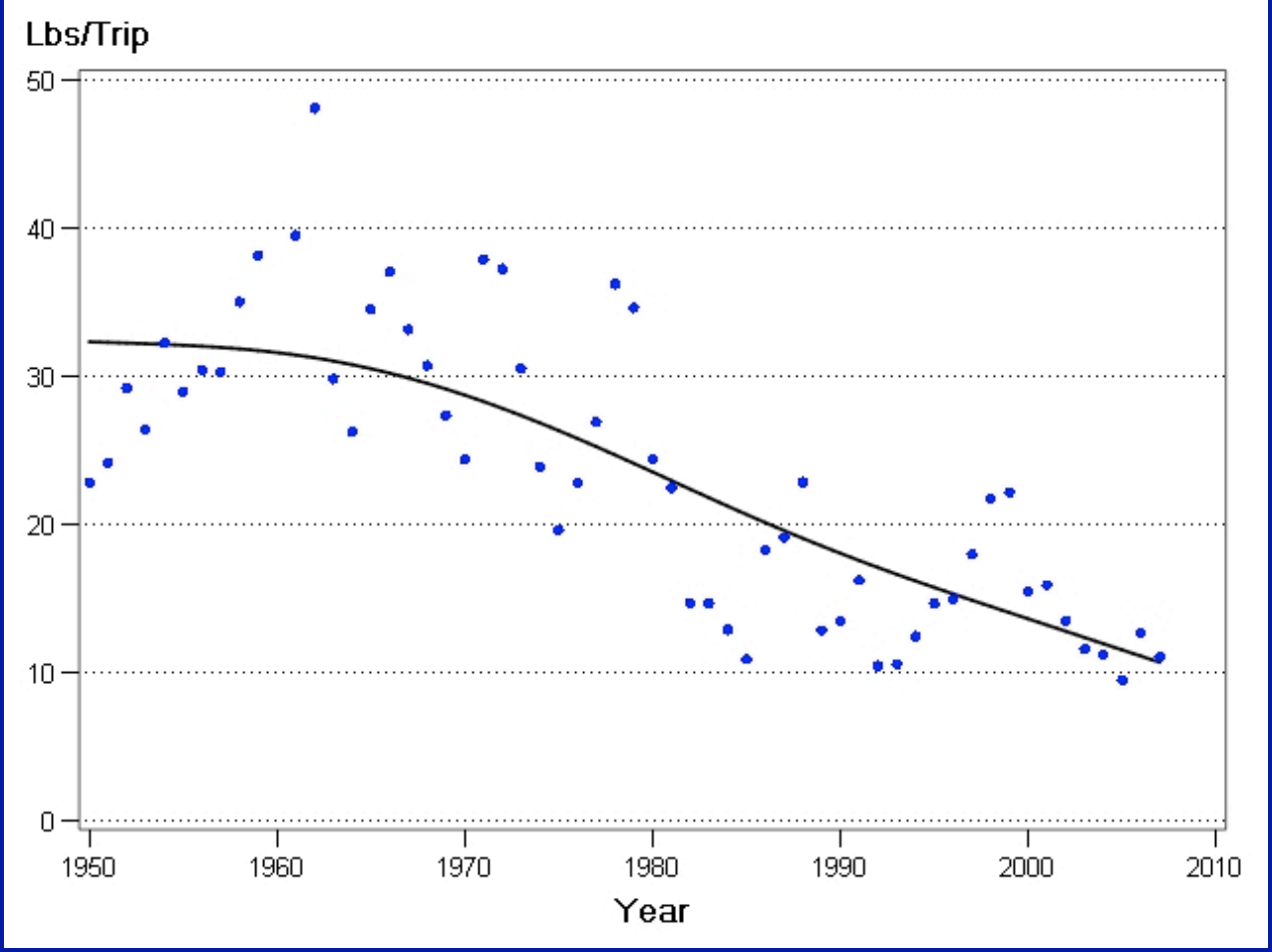
Red Weke Most Common Commercial Species



Kumu & Munu
Annual Com Landings Declining



Moano Kali & Moelua
Annual Landings Declining



Questions

- Should all or some species in the goatfish group be regulated?
- Should there be a different or same minimum size for commercial and non-commercial users?

Regulated Goatfish

- White weke or weke a (*Mullodichthys flavolineatus*)
- Kumu (*Parupeneus porphyreus*)
- Moano (*Parupeneus multifaciatus*)

Goatfish Size at Maturity

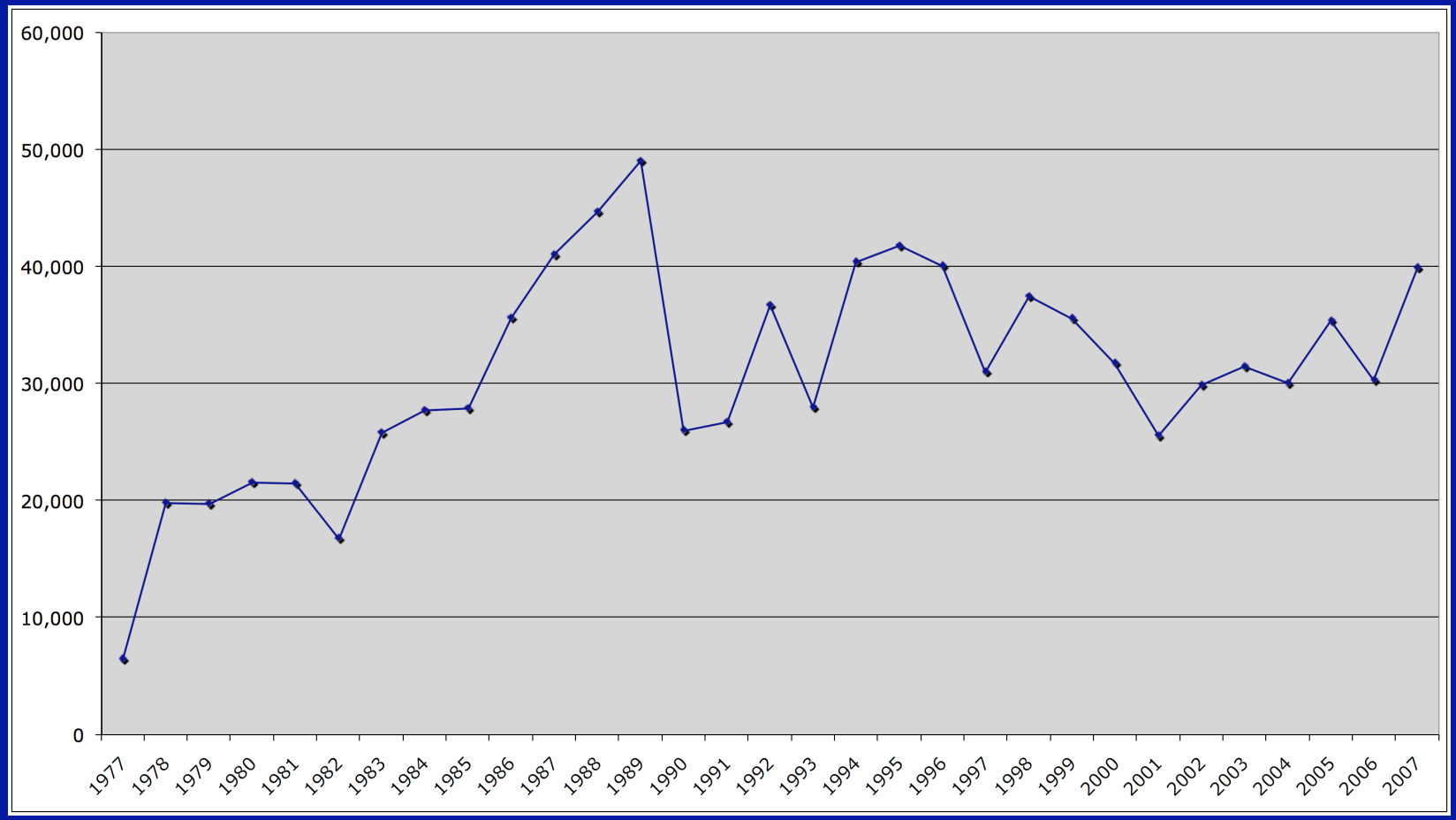
Common Name	Scientific Name	Current Min Size	Length at Maturity
Kumu	Parupeneus porphyreus*	10”	L_{50} = 10.4 - 11.3” FL
Moano kali	P. cyclostomus		L_{50} = 11.4” FL
Malu	P. pleurostigma		L_{50} = 7.9” FL
Moano	P. multifasciatus	7”	L_{50} = 7.1 – 7.7” SL
Munu	P. insularis		L_{50} = 7.5” FL
Weke nono	P chrysonemus*		
Moelua	Mulloidichthys pflugeri		L_{50} = 10.3” FL
Weke a’a	M. flavolineatus	7”	L_{50} = 6.8” FL
Weke ula	M. vanicolensis		L_{50} = 7.4” FL
Striped goat	Upeneus vittatus[1]		
Weke pueo	U arge		

* = endemic 1 = introduced

Why Regulate the Parrotfish?

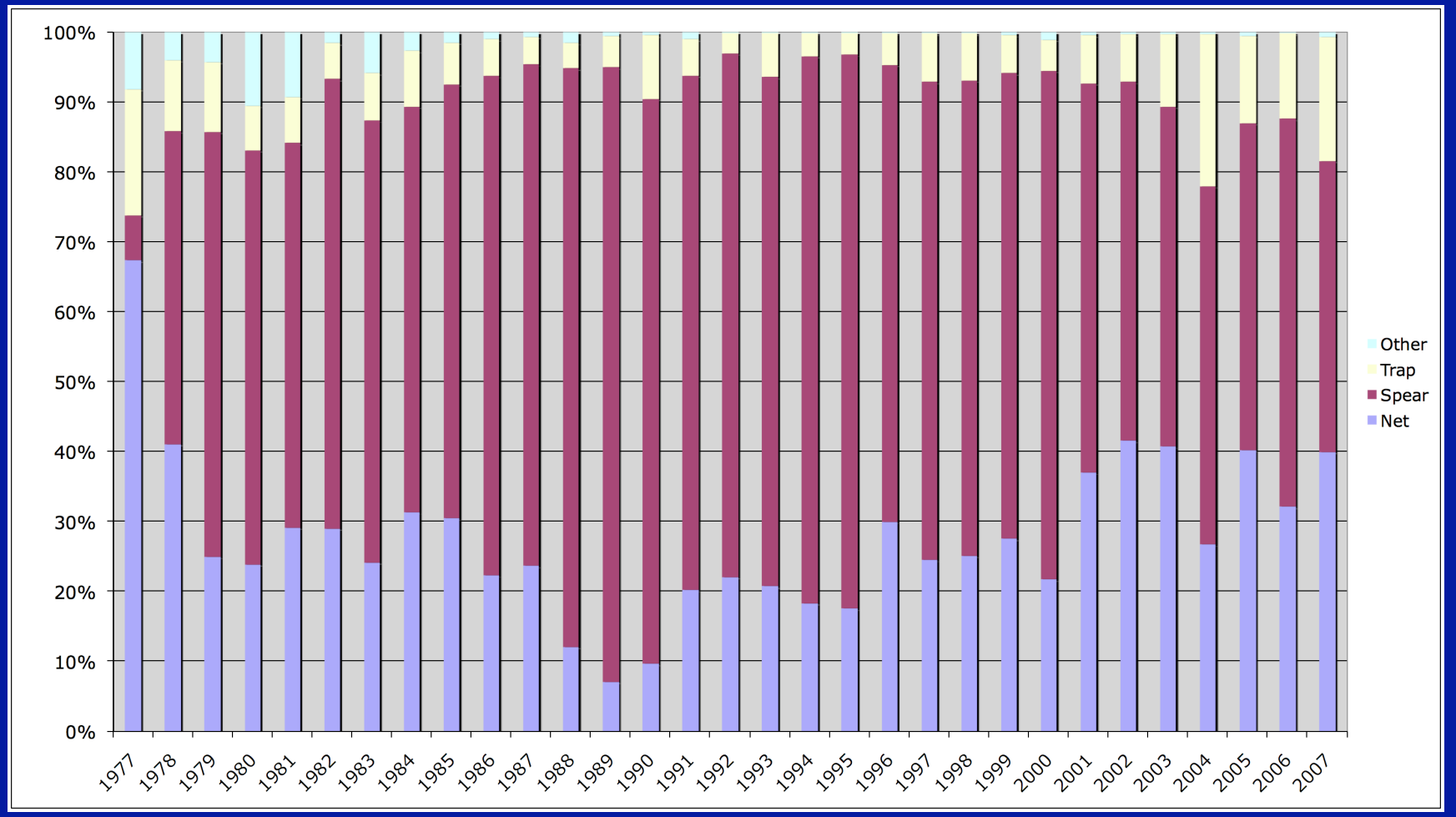
- Commercial landings indicate increases in total annual MHI and Oahu catches and catch rates
- On Oahu, fishing gear changing from spears to nets
- Change in gear may account for raising catch rate
- Increased catches may be caused by more efficient gear rather than increase in fish population

Annual Uhu Landings in Pounds



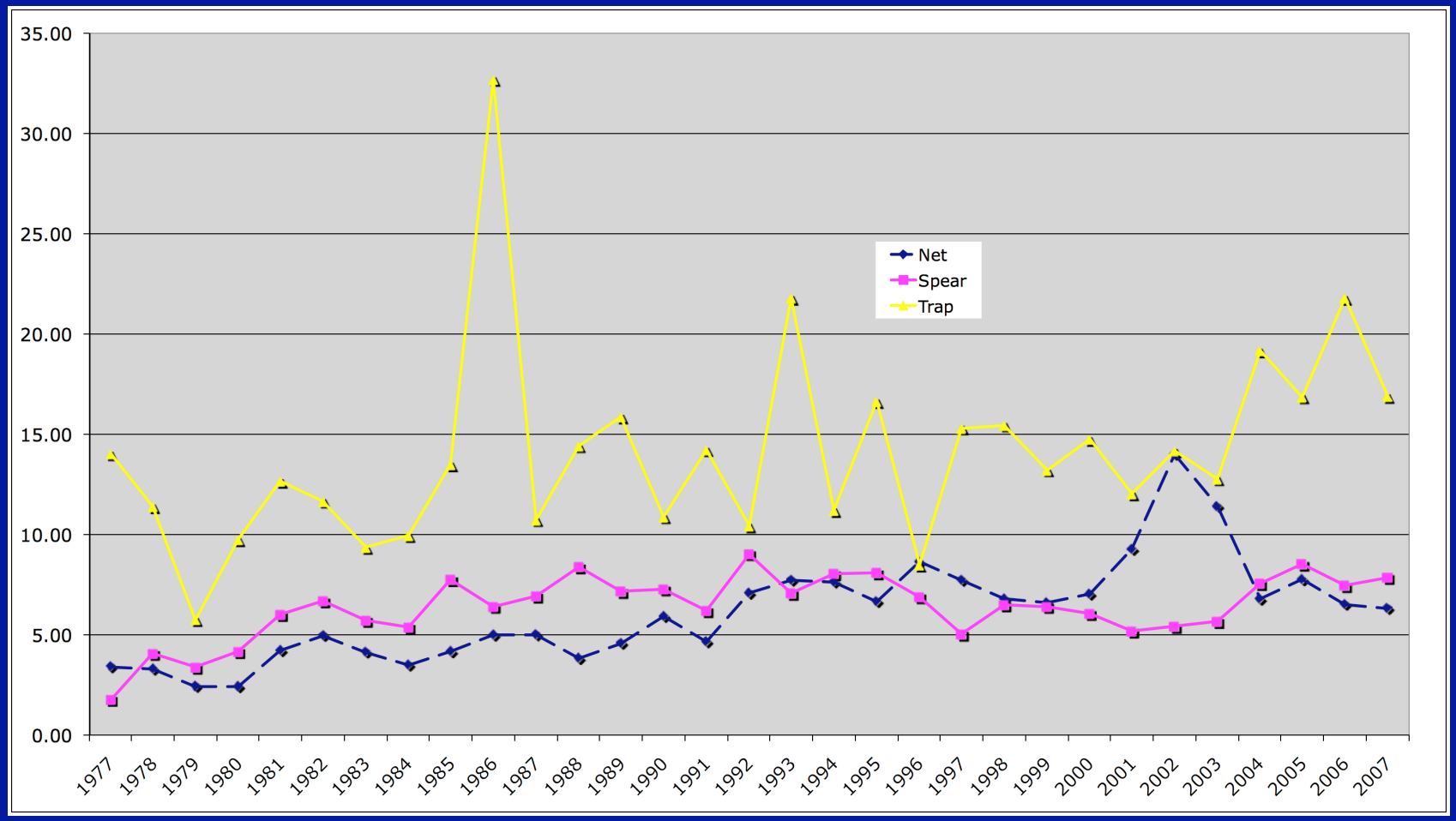
Annual landings increasing

Most Uhu Taken by Spear

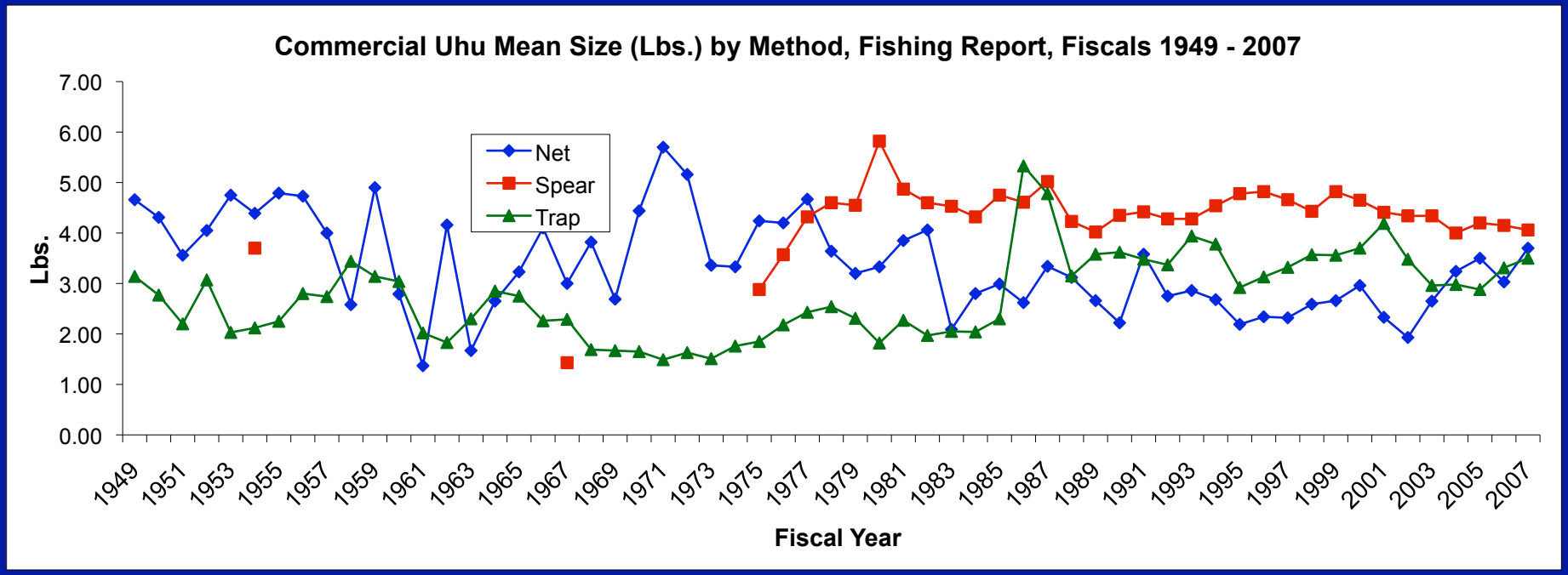


Red area is percentage of catch taken by spear

Each Uhu Trap Fisher Averages More Trips Per Year

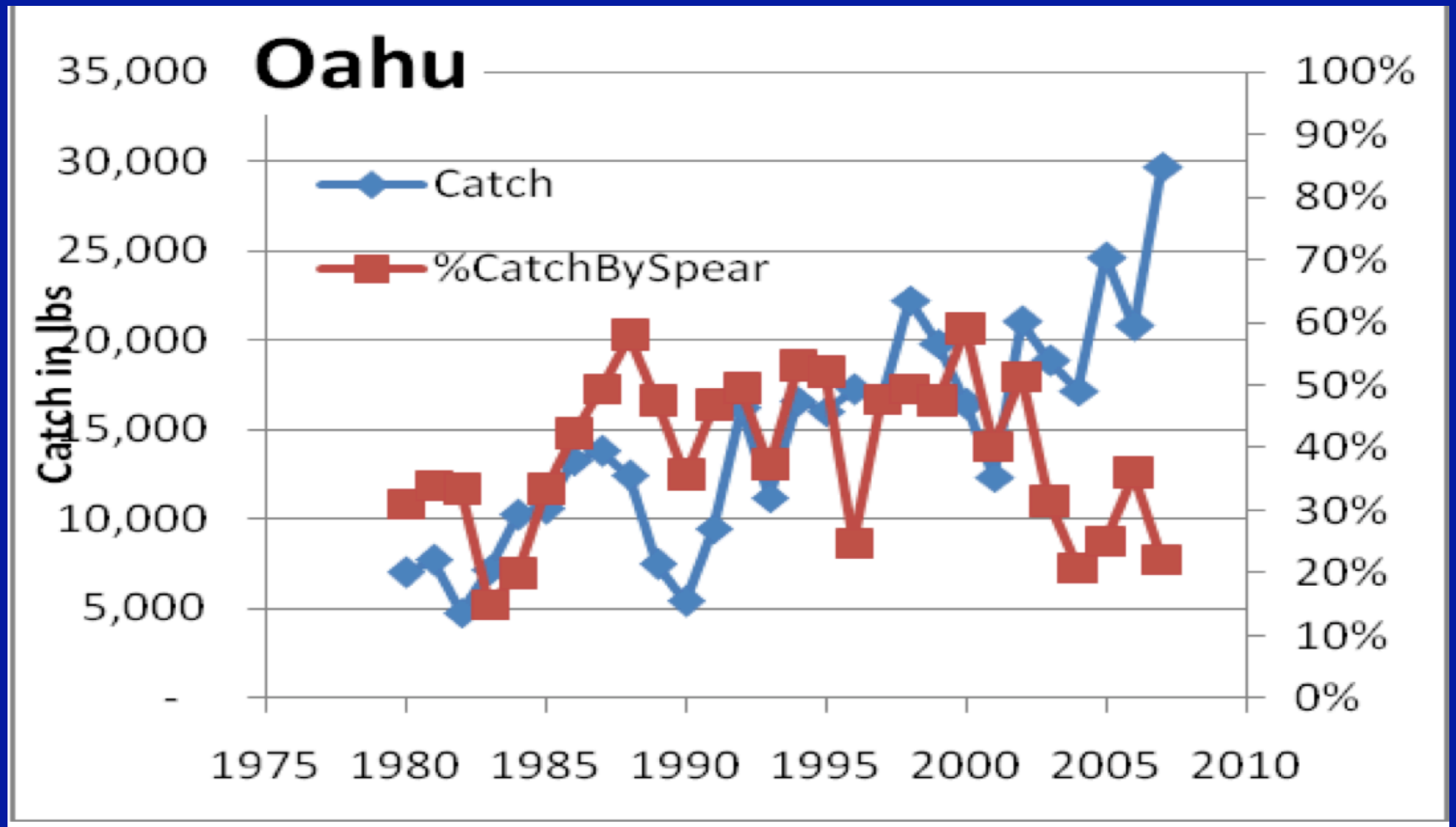


Average Size Uhu is Four Pounds



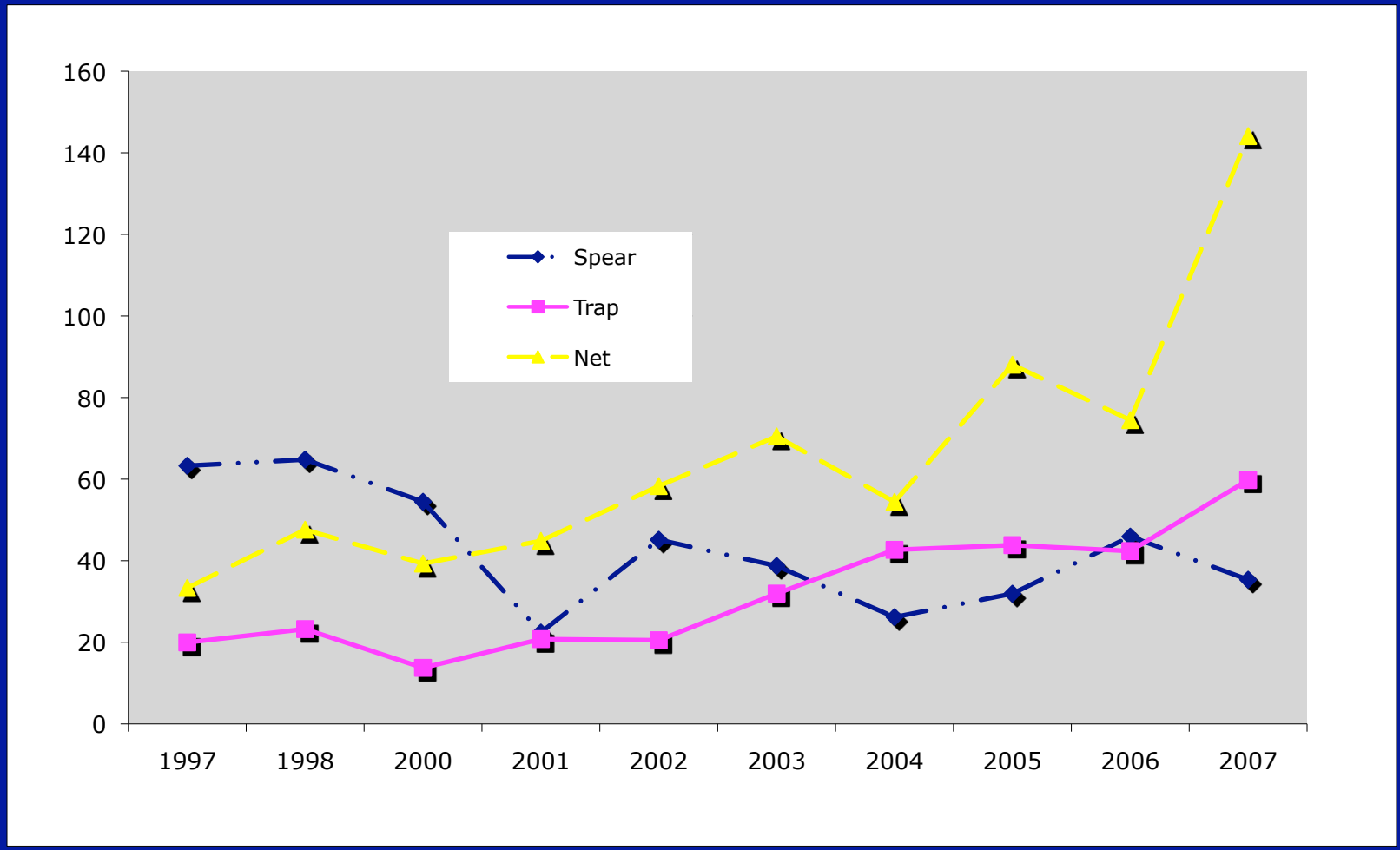
Spears traditionally took larger fish but all gears now the same

Annual Oahu Uhu Spear Catches



Uhu catches increasing but % caught by Spear declining

Uhu Pounds/Trip on Oahu by Gear



Source: Commercial Landings Data

Regulated Parrotfishes

- Scarus dubius
- Scarus psittacus
- Scarus rubroviolaceus
- Chlorurus sordidus
- Chlorurus perspicillatus

Parrotfishes

Common Name	Scientific Name	Minimum Size	Size at Maturity
Lauia/regal	Scarus dubius*	12”	L_{50} = 10” FL
Uhu/palenose	S psittacus	12”	L_{50} = 6” FL
Palukaluka/red lip	S rubroviolaceus	12”	L_{50} = 14” FL
Bullethead	Chlorurus spilurus	12”	L_{50} = 9” FL
Uliuli/ahu’ula	C perspicillatus*	12”	L_{50} = 14” FL
Ponuhunuhu	Calotomus carolinus		L_{50} = 12” FL
Panunu	C zonarchus*		L_{50} = 8” FL

* endemic

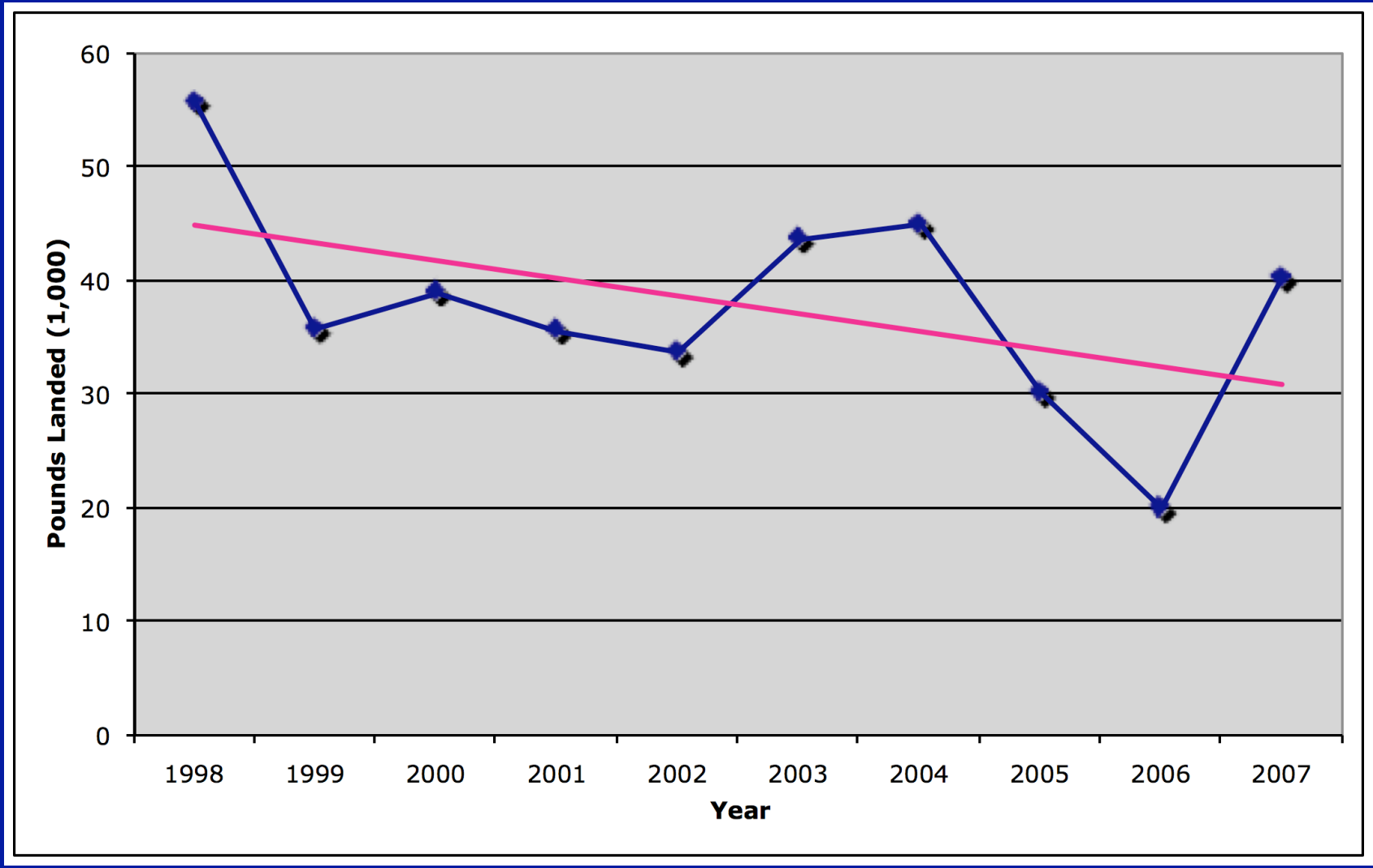
Questions

- Should all or some species in the Uhu group be regulated?
- Should there be a different or same minimum size for commercial and non-commercial users?

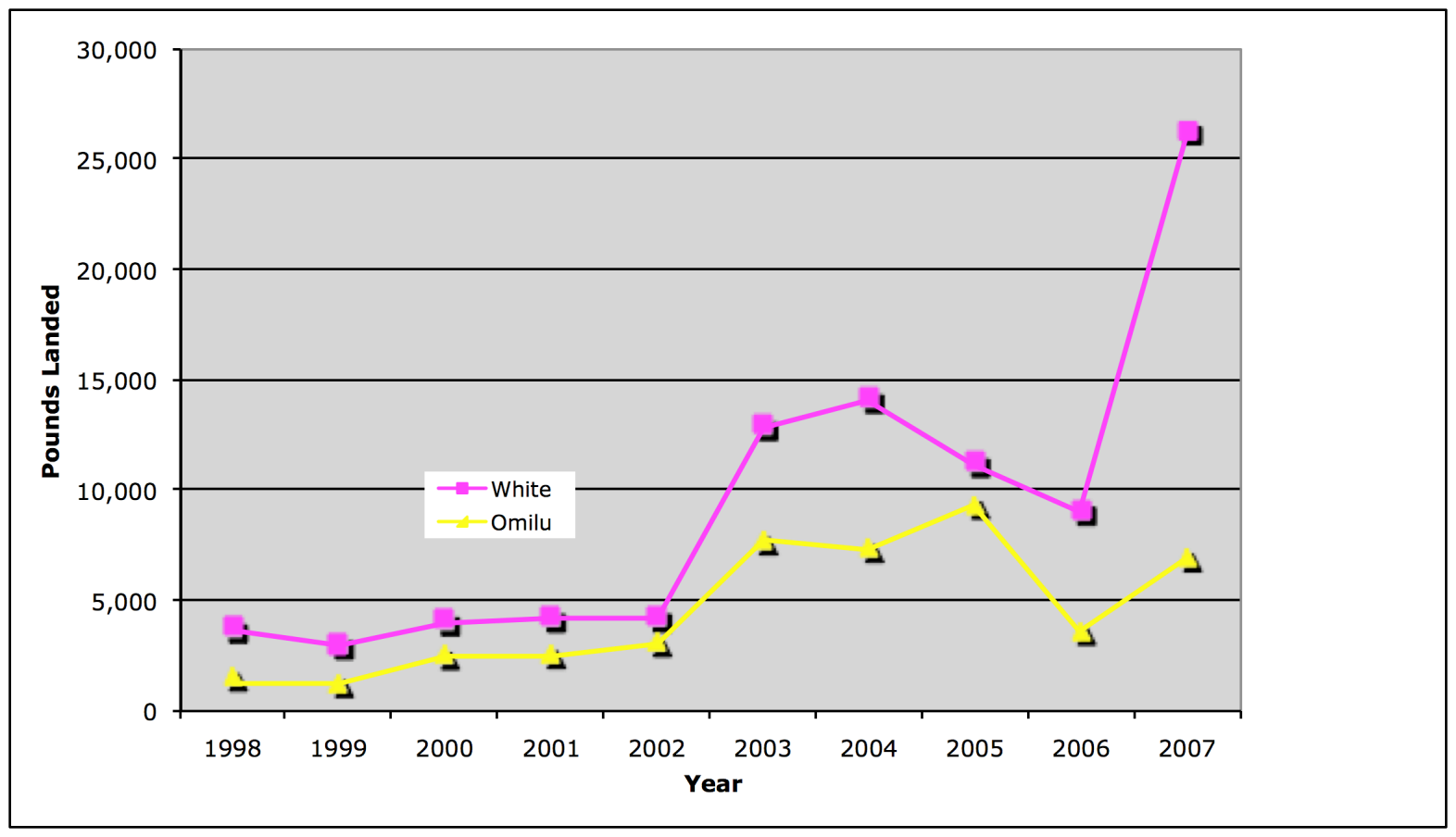
Why Regulate Papio/Ulua?

- Historically most popular marine sport fish
- Decreasing commercial demand for papio/ ulua due to ciguatera
- Fishers complaining most recent regulatory changes need to be revisited

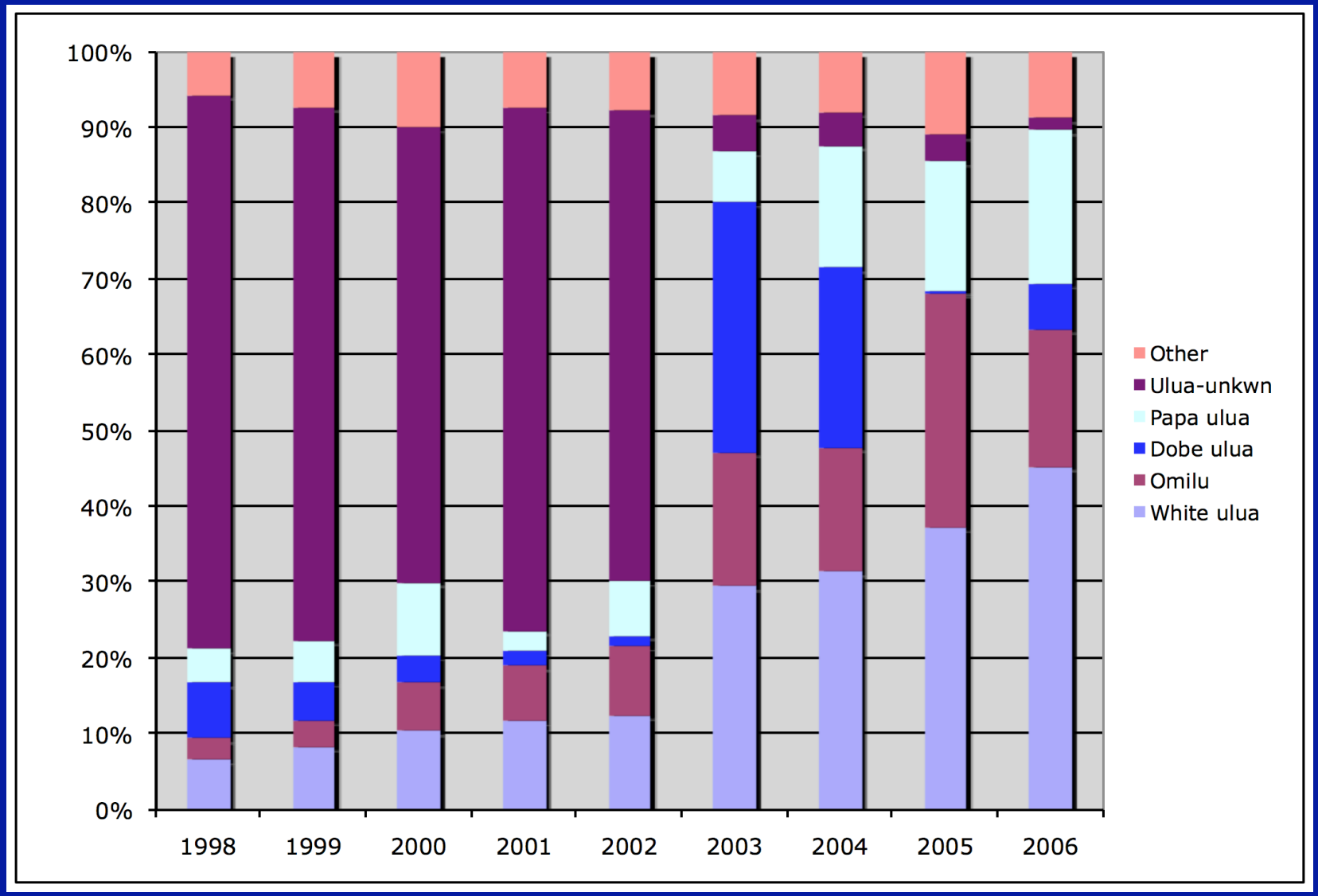
Declining Commercial Ulua Landings



Commercial Landings of White & Omilu Increasing



Annual Com Landings by Species



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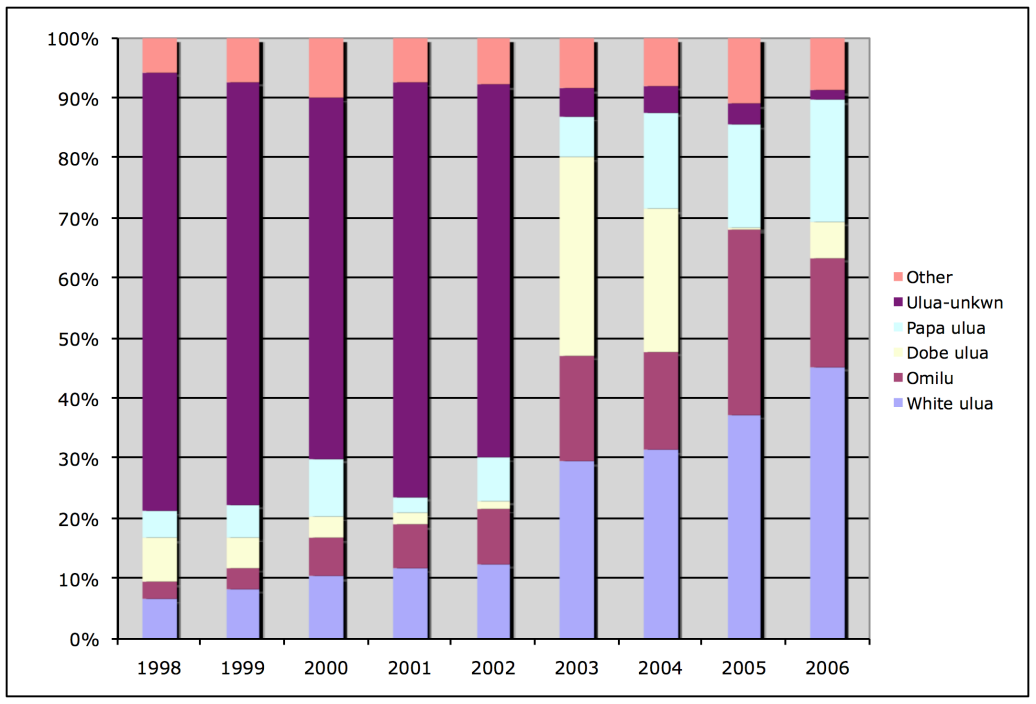


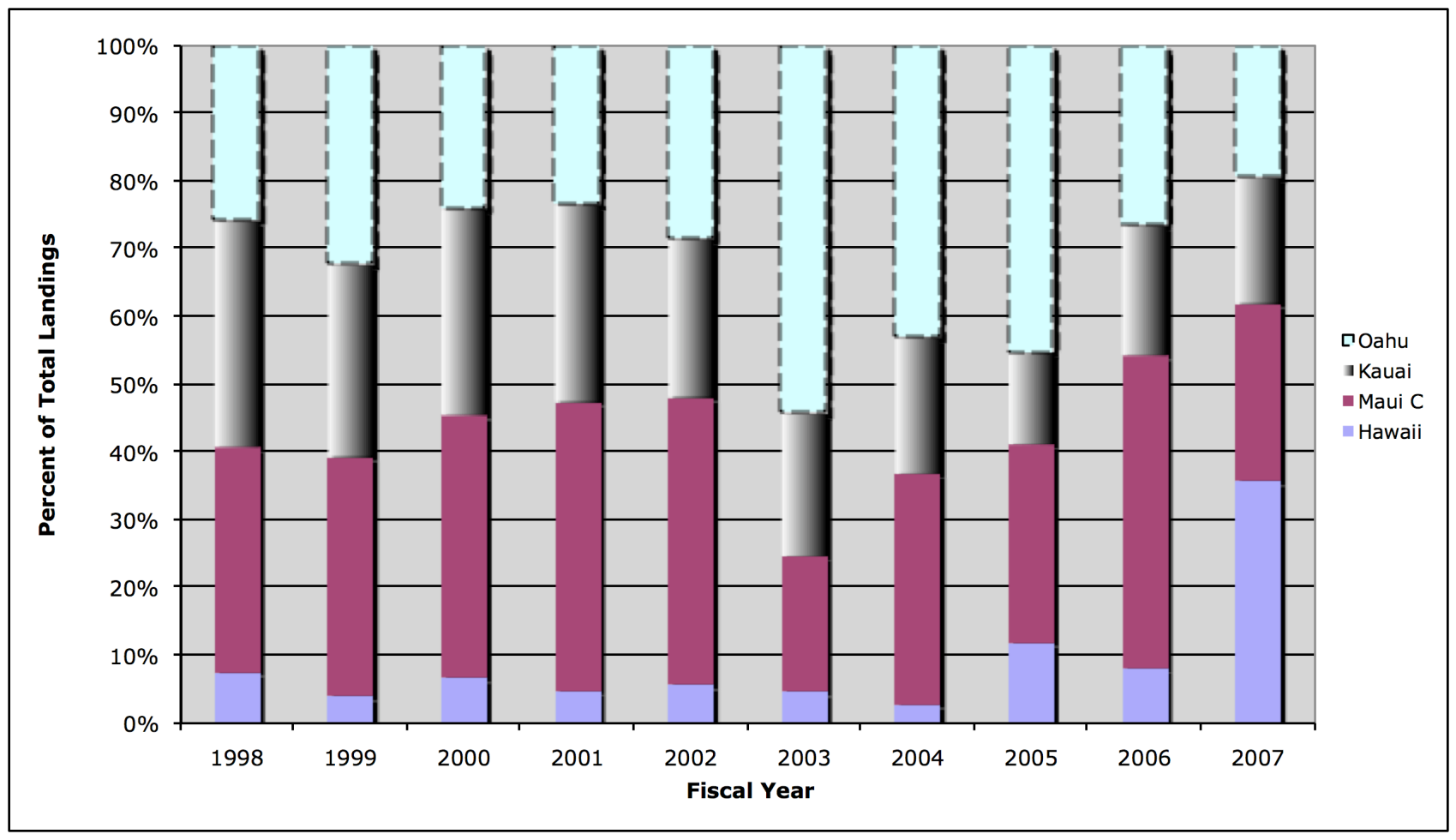
Whites and omilu make up over 60% of the catch in the last two years

Four species make up 85-90% of the catch in last four years

Unknown category clarified since 2003

Papa becoming more common in recent years

Where Are Ulua Caught?



Regulated Ulua

- **Caranx lugubris**
- **Caranx sexfasciatus**
- **Caranx ignobilis**
- **Caranx melampygus**
- **Carangoides equula**
- **Carangoides ferdau**
- **Carangoides orthogrammus**

Comparison of Weight, Age, & Maturity at 24 inches by Species

Species	Regulated	Weight (pounds)	Length (inches)	Age (years)	Mature (inches)
White (C ignobilis)	10”/16”	11	25	4	24
Omilu (C melampygus)	10”/16”	9	24	5	12-16
Black (C lugubris)	10”/16”	10	24	7	15-27
Menpachi (C sexfaciatus)	10”/16”	8	24	5	14-25
Kagami (A ciliaris)		6	25	3	22-40
Paopao (G speciosus)		8.5	24	5	19-34
Yellow spot (C orthogrammus)	10”/16”	8	24	7	12-21
Buta (P dentex)		9	24	3	19-34
Barred (C ferdau)	10”/16”	10	24	7	14-25

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Next Steps

- Analyze public comments
- Create draft rules based on these and other comments
- Conduct a second round of Statewide public meetings of proposed rules (late 2008?)
- Analyze public comments again
- Initiate formal administrative rules procedure (2009)

What are your thoughts on:

1. **Managing high priority marine species first.**
2. **Using minimum size to manage high priority marine species .**
3. **Allocating resources among various users (commercial, subsistence, cultural, recreational, etc.).**
4. **Any other comments or suggestions to better manage our nearshore marine resources.**

Working together

We can create fishing rules that:

1. **Are based on good science**
2. **Are effective in ensuring sustainable resources**
3. **Make sense**

Thank You!

Contact Information

- Division of Aquatic Resources
- 1151 Punchbowl St, Rm 330
- Honolulu, HI 96813

- Alton Miyasaka
- 587-0092, if no answer call 587-0100 and leave message

The End